

Listing of Claims:

Claims 1-26 (cancelled)

1 27. (new) A process for the production of liquefied natural gas utilising a
2 refrigeration cycle, the process comprising the steps of:

- 3 (i) pre-treatment of a natural gas stream;
4 (ii) chilling of either or both of the resulting pre-treated natural gas stream or
5 a refrigerant gas stream within the refrigeration cycle, the chilling being driven at least in
6 part by waste heat from the refrigeration cycle; and,
7 (iii) passing the pre-treated natural gas stream of steps (i) or (ii) through the
8 refrigeration cycle and liquefying the pre-treated natural gas stream of steps (i) or (ii).

1 28. (new) A process according to claim 27, wherein the waste heat comprises hot
2 jacket water and/or hot exhaust gases from a main gas engine or turbine driven
3 compressor.

1 29. (new) A process according to claim 27, wherein the waste heat is provided
2 from one or more of the group of prime movers, compressors, burning of flare or other
3 waste gases or liquids, and solar power.

1 30. (new) A process according to claim 27, wherein the waste heat from the
2 liquefaction step is utilised, at least in part, in the gas pre-treatment step.

1 31. (new) A process according to claim 27, wherein the chilling step condenses
2 certain components of the pre-treated natural gas stream.

1 32. (new) A process according to claim 31, wherein components of the natural gas
2 stream condensed in this manner include one or more of water, heavy hydrocarbons
3 and/or carbon dioxide.

1 33. (new) A process according to claim 27, wherein the chilling step cools the gas
2 stream to a temperature of between about -80°C and 10°C.

- 1 34. (new) A process according to claim 27, wherein the chilling of the pre-treated
2 gas stream is conducted in a number of stages so as to allow the selective condensation
3 and removal of various components thereof.
- 1 35. (new) A process according to claim 27, wherein the chilling of the refrigerant
2 gas stream causes some components in the refrigerant gas to condense, the liquid thus
3 formed being pumped and flashed to improve efficiency as in a conventional mixed
4 refrigerant cycle.
- 1 36. (new) A process according to claim 27, wherein the chilling step utilises either
2 a lithium bromide or an ammonia absorption chiller.
- 1 37. (new) A process according to claim 27, wherein either a turbo-expander or 'JT'
2 valve or nozzle device is added between the chilling step and the liquefaction step to
3 further cool the natural gas stream.
- 1 38. (new) An apparatus for the production of liquefied natural gas, the apparatus
2 comprising an absorption and/or membrane package for carbon dioxide removal, a
3 dehydration package for water removal, a liquefaction package, at least one chiller and at
4 least one refrigerant compressor package, the chiller being arranged so as to chill the
5 natural gas stream to be liquefied.
- 1 39. (new) An apparatus according to claim 38, wherein the liquefaction package
2 further comprises the chiller arranged to chill a pre-treated natural gas stream from the
3 solvent absorption and dehydration packages prior to passing that gas stream to a
4 cryogenic heat exchanger.
- 1 40. (new) An apparatus according to claim 38, wherein the chiller is located before,
2 or as a part of, an amine and/or membrane package so as to assist in pre-treatment of the
3 natural gas stream.
- 1 41. (new) An apparatus according to claim 38, wherein the chiller comprises one or
2 more chiller stages.

- 1 42. (new) An apparatus according to claim 38, wherein the chiller is located in the
2 refrigeration cycle to improve the efficiency thereof.
- 1 43. (new) An apparatus according to claim 38, wherein the chiller is located in both
2 the natural gas stream and refrigeration cycle, or in either one thereof.
- 1 44. (new) An apparatus according to claim 38, wherein the chiller is driven by
2 waste heat from the or each refrigerant compressor packages.
- 1 45. (new) An apparatus according to claim 44, wherein waste heat is also directed
2 to an amine package for amine regeneration and/or to the dehydration package for
3 regeneration of molecular sieves used therein.
- 1 46. (new) An apparatus according to claim 38, wherein the chiller is provided in
2 the form of either an ammonia or lithium bromide absorption chiller.
- 1 47. (new) An apparatus according to claim 46, wherein the ammonia absorption
2 chiller cools the gas stream to about -30° to -80°C whereas the lithium bromide absorption
3 chiller cools the gas stream to about 0 to 10°C.
- 1 48. (new) An apparatus according to claim 38, wherein a turbo-expander or 'JT'
2 valve or nozzle device is added downstream of the chiller.
- 1 49. (new) A refrigeration process wherein either or both of a process gas stream or
2 a refrigerant gas stream within a refrigeration cycle are chilled in a chilling step, wherein
3 waste heat from the refrigeration cycle is utilised in the chilling step, thereby reducing a
4 refrigeration load.
- 1 50. (new) A refrigeration process according to claim 49, wherein the refrigeration
2 process is utilised in either of an air separation plant or an LPG extraction process.
- 1 51. (new) A refrigeration process according to claim 49, wherein the chilling step
2 is employed to pre-treat the process gas stream.